Meeting minutes 19- March-20001

Presents: J. Beebe-Wang, N. Catalan-Lasheras, D. Davino, A. Fedotov, K. Gardner, H. Hahn, Y. Y. Lee, N. Malitsky, B. McGahern, Y. Papaphilippou, G. Parzen, D. Raparia, A. Shishlo, N. Tsoupas, J. Wei, B. Weng, S.Y. Zhang

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1. News (Y.Y. Lee, W.T. Weng and Jie Wei) David Moncton became senior scientist in charge of the 4th generation light source (FEL). Weishi Wan of the SNS-AP group at Oak Ridge will move to Berkeley (ALS) by the end of August. They will be an opening for recruiting someone but on application software. PCR status table discussed between YYL, BW and JW and converged. It was sent to Norbert Holtkamp. There is a discussion between Norbert and Jim Stovall on the necessity of a pencil beam for linac commissioning. DR will be officially responsible for HEBT/RTBT commissioning and NCL for the ring part.

2. DR is writing a note to accompany the PCR for the two pitching magnets needed to correct the height difference between the Ring and RTBT.

3. Booster studies preliminary results by A. Fedotov

   - For the working point (4.7,4.8), the signal of the Beam current transformers was extracted for different intensities. The loss comparison shows that there is a pick of 14% losses for a calculated tune-shift of 0.07. AF claims that this indicates losses when the envelope crosses the skew sextupole integer resonance 2Qx+Qy=14. YYL objects that particles in the core of the beam with small amplitudes should be pushed out of the resonance before getting lost and only particles in the tail, due to their large amplitudes will be lost. NCL points that the measurements are too noisy and preliminary to draw any meaningful conclusion. YP suggested that it is difficult to correlate losses with resonances if we are not sure first about the working point position (chromaticity, etc.).

   - For a “theoretical” incoherent tune-shift of 0.28 no serious loss was observed, although the particles crossed the half-integer in the incoherent sense. AF attributes that to the fact that, in the coherent sense, the particle has not yet crossed the half integer resonance. Losses should be expected at 0.28*8/5=0.32 incoherent tune-shift.

   - AF showed simulations of the SNS in favor of this explanation, for two different intensities and the complete non-linear magnet model (fringe-fields, magnet errors to the 10^{-4} level, tilts of 1 mrad and misalignments of 0.5 mm). He showed that for the working point (6.4,6.3) which is similar to the one of the AGS booster and for two intensities (2 and 0.5 10^{14} particles) the loss only due to space charge was the same (1% level). With all errors the losses were 13% for the low intensity and 7% for the high. YYL remarked that in absolute value the losses are more for the higher intensity.

4. YP reported that the expanded magnet parameters list of Jacques Negrin was checked and corrected by YP, DR and NCL. NCL will write a note on the injection area with the latest parameters of the actual lattice. YP reported the progress on documenting the PCRs on corrector

power supplies, chromatic sextupoles and main power supply split for the arc quadrupoles. He finally quoted the work done by Wuzheng Meng on the 26Q40 wide arc quad magnetic model: in the chamfered model, the dodecapole error was reduced to the 10^{-4} level.

5. NT presented preliminary results on the 30Q48 narrow doublet quad magnetic model. He showed that without chamfers, the dodecapole is large (~120 units). He is currently working on finding the optimal chamfer for reducing the dodecapole to the 10^{-4} level. YP reminded that the correction should be local and a body correction would not be effective due to large variation of the beta functions. He will produce all the multipoles indicated not only at the center of the magnet but all along the longitudinal direction.